

Chapter 9: Legal Issues

I. The Meaning of “Orbital Debris”

“Orbital debris” is a popular rather than legal term. As such, it does not have a precise definition. The popular term is commonly used to indicate components or fragments of space objects that are spent or no longer functional. Orbital debris usually refers only to tangible, physical objects that are man-made (and not, for example, meteorites). Legal sources that are potentially relevant to orbital debris do not use the term orbital debris. Rather, they use terms such as “harmful interference” or “component parts of a space object.” Thus, legal terms must be analyzed case by case to determine whether they could include the popular notion of orbital debris.

II. Applicable Domestic Law

Two kinds of domestic law are potentially applicable to orbital debris: regulatory law concerning standards that must be met to obtain authority to launch and tort law relating to damage that occurs as a result of orbital debris.

With respect to regulatory law, U.S. governmental space activities (both civil and military) do not appear to be governed by legal standards regarding orbital debris. As a legal matter, the National Environmental Policy Act and Executive Order 12114, which require review of the environmental impact of certain federal actions, do not apply to impacts in space per se. Thus, while assessment of potential terrestrial impacts of orbital debris may be required, assessment of potential impacts in space is not (although some agencies have done such assessments as a matter of discretion).

Regarding private commercial launches, the Commercial Space Launch Act gives authority to DOT to prescribe such requirements, with respect to launches and the operation of launch sites “necessary to protect the public health and safety, safety of property, national security interests and foreign policy interests of the United States” (49 United States Code 70105).

In addition, under the Commercial Space Transportation Licensing Regulations, 14 CFR Chapter III, licensees are required to provide information on U.S. objects placed in space as a result of a launch event. The information is then relayed to the United Nations through the

Department of State in accordance with the Convention on Registration of Objects Launched into Outer Space.

With respect to remote sensing from satellites, the Land Remote Sensing Policy Act of 1992 (which repealed the Land Remote Sensing Commercialization Act of 1984) provides that a licensee shall “upon termination of operations under the license, make disposition of any satellites in space in a manner satisfactory to the President” (section 202(b)(4), Title II). This provision would appear to permit the Department of Commerce (DOC) to require that a spent spacecraft not be left in a position that contributes to the proliferation of orbital debris. Presumably, design and orbital conditions could be imposed to promote the desired disposition.

With respect to the second kind of applicable law, it is possible that U.S. tort law could potentially be applied in the case of damage caused by orbital debris in the U.S. (A suit against the U.S., as opposed to a private entity, would have to be in accordance with the Federal Tort Claims Act.) U.S. courts might also establish jurisdiction where negligence or a wrongful act in the U.S. resulted in damage caused by debris in space or elsewhere outside the U.S. Thus, even absent federal regulation, the development of a body of common law related to damage caused by orbital debris could lead to the existence of standards regarding the minimization of such debris.

III. Applicable International Law

There are several international agreements potentially bearing on orbital debris. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, which entered into force on October 10, 1967, contains principles which, although general, would appear relevant to any discussion of orbital debris. First, the Treaty provides that parties bear responsibility for “national activities” in space and that nongovernmental activities require authorization and continuing supervision (see Article VI). This provision makes clear that a party must have some kind of approval/monitoring process for private space activities and that, although the scope of “national activities” is unclear, a party could be

responsible for at least certain of its nationals' activities in space.

Second, the Treaty provides that parties are obliged to conduct all their outer space activities with due regard to the corresponding interests of other parties (see Article IX). Although parties are called upon to avoid adverse changes in the environment of the Earth resulting from the introduction of "extraterrestrial matter," it is unlikely that this clause was intended to cover matter originating on Earth. In addition, a party is obligated to consult if an activity planned by it or its nationals would cause "potentially harmful interference" with activities of other parties in the exploration and use of outer space. It would appear that the generation of orbital debris could, depending on the circumstances, be viewed as falling within the scope of this provision.

Third, the Treaty provides that each party that launches or procures the launch of a space object, as well as each party from whose territory an object is launched, is internationally liable for damage to another party (or its natural/juridical persons) by such object (or its component parts) on the Earth, in air space, or in outer space. This principle is further elaborated in the Liability Convention, as discussed below.

Fourth, the Treaty provides that the party on whose registry a space object is launched into outer space retains jurisdiction and control over such object while it is in outer space (Article VIII). The ownership of a space object and its component parts is not affected by their presence in outer space or their return to Earth. These principles are relevant to the issue of destruction or removal of non-U.S. debris, as discussed below.

The treaty that is perhaps most relevant to a discussion of orbital debris is the Convention on International Liability for Damage Caused by Space Objects, which entered into force on September 1, 1972. The Convention imposes upon a launching state absolute liability for damage caused by its space object on the Earth or to aircraft in flight. In the case of damage other than on the Earth to a space object by the space object of another state, the latter is liable if the damage is due to its fault or the fault of persons for whom it is responsible. A "space object" is defined to include "component parts of a space object as well as its launch vehicle and parts thereof"; there is no requirement that such parts be functional. Thus, as orbital debris, a launching state's potential liability under the Convention would continue despite the nonfunctional nature of its orbital debris space object.

In the case of debris causing damage to another space object other than on Earth, the Convention is silent as to what constitutes "fault." Clearly in

order to establish fault for damage caused by orbital debris in space, it is necessary to demonstrate more than the mere production of debris as a consequence of legitimate space operations. Otherwise, the fault standard would be indistinguishable from the absolute liability standard applicable to damage caused on Earth by space objects. Analogizing from the tort law of many states, some form of negligence standard might be appropriate. Liability would then depend on whether a state's actions in controlling its space objects were "reasonable." The present state of space technology does not permit activities in space that are completely debris free; hence, a negligence regime might imply an obligation of states to take reasonable steps to prevent foreseeable damage. Many factors would come into play in deciding what steps are reasonable and what damage is foreseeable, including the proximity of other space objects, the reason for the creation of the debris, the cost of preventing the creation of debris, and the feasibility of providing warnings to states potentially affected by the debris.

Under the Convention, joint launching states are jointly and severally liable for damage; as between themselves, they may apportion such liability, but a third state may seek full recovery from either of them. (A "launching state" means a state that launches or procures the launch of a space object, as well as a state from whose territory or facility a space object is launched.) A party that suffers damage or whose natural or juridical persons suffer damage may bring a claim through diplomatic channels. The standard of compensation is to be in accordance with international law and principles of justice and equity, in order to restore the injured party to its pre-damage condition. In the absence of a diplomatic settlement, the Convention provides for the establishment of a Claims Commission at the request of either party. The Commission's award is only binding if the parties so agree; otherwise, it is a recommendatory award that the parties are to consider in good faith.

Although the Liability Convention provides a legal mechanism for establishing liability and damages, there would likely be problems of proof associated with a claim based on damage caused by orbital debris. In the likely event that damage to or destruction of a space object was caused by a small, unobservable fragment, it would be difficult to establish the identity of the launching state and therefore to invoke the Liability Convention.

The Convention on Registration of Objects Launched into Outer Space, which entered into force on September 15, 1976, requires the registration with the United Nations of any space object launched into Earth orbit or beyond. If there are two or more launching states, those states must

determine which of them will register the space object. In the event that a piece of orbital debris caused damage, this registration system might assist the state suffering damage in identifying the launching state (or at least one of two or more joint launching states) associated with such debris. If the damaged state were unable to identify the debris which caused the damage through the United Nations registration system, other parties (in particular those possessing space monitoring and tracking facilities) would be called upon under the Convention to respond to the greatest extent feasible to a request from that state for assistance in the identification of the debris.

The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, which entered into force on December 3, 1968, also contains provisions potentially relevant to orbital debris. Under this Agreement, a party discovering that a space object or component part thereof has returned to Earth in its territory is obligated to notify both the launching state and the United Nations. If the discovering party has reason to believe that the object or part is of a "hazardous or deleterious nature," that party may notify the launching state, which is to take immediate, effective steps (under the direction and control of the discovery party) to eliminate possible danger of harm.

In terms of radioactive orbital debris, there appear to be three additional relevant international agreements. The Limited Test Ban Treaty, which entered into force on October 10, 1963, obligates parties to prohibit, prevent, and not carry out any nuclear weapon test explosion or any other nuclear explosion, at any place under its jurisdiction or control in, inter alia, outer space, and the atmosphere. The Treaty was intended to prevent the wide-ranging distribution of radioactive debris. It is not clear whether violation of this provision would give rise to any liability in addition to that under the Liability Convention.

The Convention on Early Notification of a Nuclear Accident requires parties to notify potentially affected states in case of an accident involving nuclear reactors in space, or the use of radioisotopes for power generation in space objects, from which a release of radioactive material occurs or is likely to occur and which has resulted or may result in an international transboundary release that could be of radiological safety significance for another state. Again, it is not clear whether

violation of this provision would give rise to any liability in addition to that under the Liability Convention.

The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, to which the U.S. will shortly become a party, establishes a framework under which a party may provide assistance to another party in the event of a nuclear accident or radiological emergency, which could include the presence of radioactive orbital debris.

The destruction or removal (retrieval or deorbit) by one state of debris from outer space owned by another state would raise a number of issues under international law. As mentioned above, under Article VIII of the Outer Space Treaty, the state of registry retains jurisdiction and control over a space object while it is in outer space, and ownership of objects and their component parts is not affected by their presence in space. Ownership would also not be affected by the loss of function of the space object. If the launching state consented to the destruction or removal of its orbital debris, or if it abandoned its rights to the debris through a clear expression of intent, destruction or removal could be considered lawful. However, under customary international law, state property remains state property unless expressly relinquished. (Under maritime law, for example, the U.S. has consistently maintained that sunken state ships remain the property of the flag state until title is expressly transferred or abandoned, and that abandonment cannot be implied from the absence, even over a long period of time, of acts evidencing an interest in such property.)

In order to take destruction or removal measures in the absence of consent or abandonment by the launching state, it would appear that an argument would have to be made that the jurisdiction and ownership rights of the launching state must be balanced against Article IX of the Outer Space Treaty, which, as noted above, requires states to conduct their space activities with due regard to the corresponding interests of other parties. Although a launching state is not legally required to remove its objects from space (i.e., the mere presence of orbital debris is not prohibited), if orbital debris were adversely affecting the activities of other space users, an argument could be made that a state may lawfully take appropriate measures to protect itself from harm.